

quently owed their arrangement to the scales, the scales degenerated. In isolated cases only did they persist in a specialized form over the greater portion of the body (Manidæ, Dasypodidæ), otherwise usually upon the tail alone, and frequently also upon the extremities. Generally, however, they are already much reduced in the last-named region, and in the case of the majority of Mammals every trace of scales has disappeared. But very commonly the arrangement of the hairs has still remained, as though they yet stood behind scales. In this manner the hairs also point to the former presence of scales.

Contrary to my desire, this paper has assumed the appearance of a polemical character towards Römer's memoir. It seemed to me, however, to be of importance that now, when it is to be hoped that still further studies in a similar sense to that of Römer will advance the questions here touched upon, the different views should be accurately expressed and their mutual limits defined. By this means we shall attain a precise idea of the question at issue, which cannot fail to be advantageous.

Amsterdam, March 13, 1893.

II.—*List of Insects collected by Miss Elizabeth Taylor in Western North America in the Summer of 1892.* By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c., and W. F. KIRBY, F.L.S., F.E.S., &c.

#### LEPIDOPTERA. By A. G. BUTLER.

MOST of the species recorded in the following list were obtained on the Slave River in the months of June and July. The collection is of interest as extending our knowledge of the range of species hitherto received from the Rocky Mountains, California, &c. Two species are described as new to science.

Of BUTTERFLIES twenty-three species are in the collection, of which ten belong to the Nymphalidæ, four to the Lycaenidæ, six to the Papilionidæ, and three to the Hesperiidæ.

##### 1. *Anosia plexippus.*

*Papilio plexippus*, Linnæus, Mus. Lud. Ulr. p. 262 (1764).

♀. Winnipeg, Manitoba, 11th September.

2. *Limenitis arthemis*.

*Papilio arthemis*, Drury, Ill. Exot. Ent. ii. pl. x. figs. 3, 4 (1773).

Fort Simpson, Mackenzie River, 9th July, and Fort Good Hope, 18th July.

3. *Argynnis atlantis*.

*Argynnis atlantis*, Edwards, Proc. Acad. Nat. Sci. Phil. 1862, p. 54 ;  
Butt. N. Amer., *Arg.* pl. v. (1868).

Fort MacMurray, Athabasca River, 17th August.

4. *Brenthis myrina*.

*Papilio myrina*, Cramer, Pap. Exot. ii. pl. clxxxix. B, C (1779).

Rapids of the Drowned, Slave River, 1st July, and Fort Good Hope, 18th July.

5. *Brenthis freja*.

*Papilio freja*, Thunberg, Diss. Ins. Suec. ii. p. 34, pl. v. fig. 14 (1791).

Fort Good Hope, 18th July.

We have this species in the Museum from Repulse Bay.

6. *Brenthis bellona*.

*Papilio bellona*, Fabricius, Syst. Ent. p. 517. n. 317 (1775).

Rapids of the Drowned, 29th June.

7. *Phyciodes morpheus*.

*Papilio morpheus*, Fabricius, Syst. Ent. p. 529. n. 370 (1775).

Rapids of the Drowned, 29th June.

8. *Phyciodes gorgone*.

*Dryas reticulata gorgone*, Hübner, Samml. exot. Schmett. vol. i. pl. xl.  
(1806-16).

Rapids of the Drowned, 28th June.

9. *Æneis bore*.

*Papilio bore*, Esper, Eur. Schmett. i. 2, pl. c. fig. 1, pl. cviii. fig. 1  
(1790).

Rapids of the Drowned, 28th June.

10. *Cænonympha inornata*.

*Cænonympha inornata*, Edwards, Proc. Acad. Nat. Sci. Phil. 1861,  
p. 163.

Carberry, Western Manitoba.

11. *Everes comyntas*.

*Polyommatus comyntas*, Godart, Enc. Méth. ix. p. 660. n. 147 (1823).

Rapids of the Drowned, 29th June.

12. *Cupido lygdamus*.

*Polyommatus lygdamus*, Doubleday, Entomologist, i. p. 209 (1842).

Athabasca River, 5th June.

13. *Plebeius podarce*.

*Lycæna podarce*, Felder, Reise der Nov., Lep. ii p. 282. n. 359, pl. xxxv. figs. 22, 23 (1865).

Rapids of the Drowned, 1st July.

14. *Plebeius Scudderi*.

*Lycæna Scudderi*, Edwards, Proc. Acad. Nat. Sci. Philad. 1861, p. 164.

East bank of the Mackenzie River, 30 miles north of the Arctic circle, 18th July.

15. *Colias occidentalis*?

*Colias occidentalis*, Scudder, Proc. Bost. Nat. Hist. Soc. ix. p. 109 (1862).

♀ var. ? Carberry, Western Manitoba.

This specimen has an orange flush on the primaries and is not unlike some females of *C. ariadne* excepting in its superior size.

16. *Colias interior*?

*Colias interior*, Scudder, Proc. Bost. Nat. Hist. Soc. ix. p. 108 (1862).

♀. Fort Good Hope, Mackenzie River, 18th July.

It is quite possible that I have failed rightly to identify the two preceding females of *Colias*; in fact I do not believe that anyone but Mr. W. H. Edwards could form any definite opinion respecting them.

17. *Ganoris hulda*.

*Pieris hulda*, Edwards, Trans. Am. Ent. Soc. ii. p. 370 (1870).

Rapids of the Drowned, 29th and 30th June; Pulo River, 31 miles south-west of the Mackenzie Delta, 15th July.

We have specimens of this species in the Museum from British Colombia.

18. *Ganoris pallida*.

*Pieris pallida*, Scudder, Proc. Bost. Nat. Hist. Soc. viii. p. 183 (1861).

Winnipeg, Manitoba, 11th September.

19. *Euchloë simplonia*.

*Pontia simplonia*, Freyer, Beitr. Schmett. ii. pl. lxxiii. fig. 2 (1829).

Rapids of the Drowned, 29th June.

A second example of this species was in the "Zeller" collection from Colorado labelled *Anth. lanceolata*. We have no authenticated *E. lanceolata*, Boisd., in our collection; but the species so labelled is identical with *E. simplonia*. From *E. ausonides*, to which it is closely allied, it differs chiefly in its inferior size and the smaller and narrower white markings on under surface of secondaries.

20. *Papilio turnus*.

*Papilio turnus*, Linneus, Mant. Plant. p. 536 (1771).

Banks of Athabasca River, 3rd June; Rapids of the Drowned, Slave River, 26th and 27th June and 1st July.

21. *Erynnis colorado*.

*Pamphila colorado*, Scudder, Mem. Bost. Soc. ii. p. 349, pl. x. figs. 16-18, pl. xi. figs. 1, 2 (1874).

♂ ♀. Rapids of the Drowned, 29th and 30th June.

22. *Adopæa*, ? sp.

A single somewhat broken and headless example of a species apparently allied to *A. hylas*, Edw., but with the ground-colour of the wings almost black.

Carberry, Western Manitoba.

23. *Thanaos martialis*.

*Nisoniades martialis*, Scudder and Burgess, Proc. Bost. Nat. Hist. Soc. xiii. p. 291, fig. 5 (1870).

Rapids of the Drowned, 29th June.

Of MOTHS twenty-two species were obtained, of which one is a Sphingid, four are Noctuæ, and the remainder Geometræ; of these the Noctuæ are the most interesting and are, fortunately, in the best condition.

24. *Hemaris buffaloensis*.

*Hæmorrhagia buffaloensis*, Grote and Robinson, Ann. Lyc. Nat. Hist. New York, viii. p. 437, pl. xvi. figs. 18, 19 (1867).

Banks of the Slave River, 26th June.

25. *Acronycta lepusculina*.

*Acronycta lepusculina*, Guenée, Noct. i. p. 46. n. 55 (1852).

Fort Good Hope, Mackenzie River, near the Arctic circle,  
18th July.

26. *Syneda petricola*.

*Euclidia petricola*, Walker, Lep. Het. xiv. p. 1462. n. 8 (1857).

Rapids of the Drowned, 1st July.

The type of this species was from the Rocky Mountains. It is like a small pale form of *S. divergens*, Behr., and the markings of the secondaries vary in the same way, the comma-shaped discocellular black dash being either isolated or connected by a bar to the submarginal band.

27. *Euclidia annexa*.

*Euclidia annexa*, H. Edwards, Entom. Amer. vi. p. 115 (1890).

Banks of the Slave River, 26th June; Rapids of the Drowned, 28th June and 1st July.

The type specimen and others collected with it were obtained in Oregon by Lord Walsingham.

28. *Euclidia cuspidata*.

*Drasteria cuspidata*, Hübner, Samml. exot. Schmett. Zutr. i. p. 16. n. 35, figs. 69, 70.

Banks of the Slave River, 26th June; Rapids of the Drowned, 30th June.

29. *Metrocampa perlata*.

*Metrocampa perlata*, Guenée, Phal. i. p. 128. n. 197.

Fort Good Hope, Mackenzie River, 18th July.

30. *Cosymbia pendulinaria*.

*Ephyra pendulinaria*, Guenée, Phal. i. p. 414. n. 674.

Rapids of the Drowned, 2nd July.

31. *Deilinia exanthemata*.

*Phalena exanthemata*, Scopoli, Ent. Carn. p. 218. n. 542.

Fort Resolution, Great Slave Lake, in a marsh, at 2 P.M. on the 7th July, and at 11.15 P.M. on the 9th July.

The specimens differ in no respect from European examples; they do, however, differ somewhat from the allied *D. erythemaria* of the United States.

32. *Deilinia variolaria*.

*Cabera variolaria*, Guenée, Phal. ii. p. 56. n. 987.

Fort Good Hope, Mackenzie River, 18th July.

33. *Physostegania lineata*.

*Physostegania lineata*, Warren in litt.

Rapids of the Drowned, 4th July at 11.30 P.M.

This being a common Californian species, it is hardly probable that it can have been overlooked by American describers, and therefore I give the name for what it is worth without diagnosis. The single example obtained is much worn, but quite recognizable.

34. *Thamnonoma marcescaria*.

*Halia marcescaria*, Guenée, Phal. ii. p. 92. n. 1067.

♀? Rapids of the Drowned, 4th July, at 11.30 P.M.

I believe this to be the female of *T. marcescaria*, but as we only possess one male of the species, it is difficult to decide the point. The two insects differ in slight details of pattern, which are probably of not more than sexual significance.

35. *Thamnonoma brunneata*.

*Phalæna brunneata*, Thunberg, Diss. Ent. i. p. 9 (1784).

Fort Good Hope, Mackenzie River, 18th July.

I feel very doubtful respecting the identity of the uniformly coloured American species with the sharply lined European species; but, seeing that Dr. Packard, in his Monograph, calls the New-World form *T. brunneata*, I abstain from separating it without abundant material to prove its distinctness.

36. *Thamnonoma gracilior*, sp. n.

Allied to *T. brunneata*, but smaller and more slender; ferruginous; the basal area, especially of the secondaries, irrorated with blackish grey up to the median shade; the latter narrow, dusky, dentate-sinuate on the primaries and arched on the secondaries, where it is impinged upon by a more or less defined blackish lunule on the discocellulars; postmedian line blackish, sinucus, almost bracket-shaped on the primaries, limiting the external area, which is densely irrorated with blackish grey (leaving the outer borders clear in the female); the secondaries of the male are moreover more or less densely irrorated throughout; marginal line

slender, black; fringe tawny ferruginous; body of the male above blackish, the anal extremity with tawny bands. Wings below clear tawny, with blackish markings, the median shade represented by an imperfect arched line, interrupted in the male by black discocellular stigmata; postmedian line regularly dentate-sinuate; marginal line black as above: primaries with traces of the subbasal line. Body below dark grey, sprinkled with tawny scales; the centre and anal segments pale tawny; legs creamy white.

Expanse of wings, ♂ 25, ♀ 24 millim.

♂. Rapids of the Drowned, Slave River, 1st July;  
♀. Pulo River, near Mackenzie Delta, 15th July.

I have failed to discover any published description of this very distinct species, and therefore have ventured to name it.

### 37. *Tephrina*, sp.

I have not discovered any name for this species, but we have a fair series of it in the Museum from the Dalles and Rouge River, collected by Lord Walsingham. It is therefore quite possible that Mr. H. Edwards may have described it in one of his numerous papers on Californian Lepidoptera.

Rapids of the Drowned, 4th July.

### 38. *Tephrina*, sp.

A pair of an obscure little species in not very good condition, the female headless.

♂. Pulo River, near Mackenzie Delta, July 15th;  
♀. Fort Good Hope, Mackenzie River, near the Arctic circle, July 18th.

### 39. *Coremia*, ? sp.

A worn male specimen, for which I have failed to find a name, from Fort Good Hope, July 18th.

### 40. *Odezia albovittata*.

*Odezia albovittata*, Guenée, Phal. ii. p. 520. n. 1757.

Athabasca River, 17th and 20th June.

### 41. *Eutype gothicata*.

*Melanippe gothicata*, Guenée, Phal. ii. p. 388. n. 1521.

Rapids of the Drowned, 26th June.

42. *Eutype obductata*.

*Cidaria obductata*, Moeschler, Wien. ent. Monatschr. 1860, p. 374, pl. x. fig. 3.

Pulo River, near Mackenzie Delta, 15th July.

## PSEUDOSIONA, gen. nov.

Form of wings and short palpi as in *Siona*; pattern and venuration similar to *Eubolia*, the subcostal branches of secondaries (veins 6 and 7) being emitted separately; discoidal cell much longer.

Type *Pseudosiona Taylori*.

43. *Pseudosiona Taylori*, sp. n.

Greyish white; the wings being white, densely irrorated with grey, with a darker spot on the upper discocellulars and an oblique stripe of grey from costa near apex to inner margin on all the wings; vertex of head and base of abdomen whiter than the remainder of the body. The under surface is whiter, the irrorations less numerous but darker, the markings also darker and browner; legs brownish; venter indistinctly zoned with grey.

Expanse of wings 35 millim.

Pulo River, near Mackenzie River, 15th July, 1892.

44. *Ochyria designata*.

*Phalæna designata*, Hufnagel, Berl. Mon. iv. p. 612.

Rapids of the Drowned, 1st July.

45. *Larentia incursata*.

*Geometra incursata*, Hübner, Eur. Schmett. Geom. fig. 351.

Rapids of the Drowned, 1st July.

## COLEOPTERA.

Of the two Coleoptera obtained by Miss Taylor, Mr. C. O. Waterhouse has given me the following note:—

“A single specimen of one of the Elateridæ—*Corymbites*—very near *C. aripennis*, Kirby, but with rather longer elytra; possibly distinct. I have not, however, material to enable me to determine it at present. This was taken at the Great Rapids, Athabasca River, on June 9th, 1892.

“The other is *Upis ceramboides*, L., which has a wide geographical range, occurring in Saskatchewan &c. This was taken on the banks of the Slave River, June 6th.”



HYMENOPTERA, RHYNCHOTA, NEUROPTERA,  
AND ORTHOPTERA. By W. F. KIRBY.

Only a few species of these orders were obtained, and in most cases only single specimens. Some of these belong to well-known and widely distributed North-American species; but several of the remainder belong to imperfectly studied groups, in which the genera only can be determined with certainty from the materials before us. Most of the specimens were taken at Carberry, Western Manitoba, on August 4, 1892.

## HYMENOPTERA.

1. *Nematus erythrogaster* (?).

*Nematus erythrogaster*, Norton, Proc. Ent. Soc. Philad. iii. p. 8 (1864);  
Trans. Amer. Ent. Soc. i. p. 205 (1867).

Carberry, Aug. 4, 1892.

Norton's species is recorded from the United States and Canada. His type was from Massachusetts.

2. *Sirex albicornis*.

*Sirex albicornis*, Fabr. Spec. Ins. i. p. 419. n. 9 (1781).

Carberry, Aug. 4, 1892.

Widely distributed throughout the northern part of North America, being met with from Newfoundland to Vancouver's Island.

3. *Sirex bizonatus*.

*Sirex bizonatus*, Steph. Ill. Brit. Ent., Mand. vii. p. 114, pl. xxxvi. fig. 2  
(1835).

Carberry, Aug. 4, 1892; Athabasca River, Aug. 15, 1892.  
As common and widely distributed a species as the last.

4. *Ichneumon*, sp.

Carberry, Aug. 4, 1892.

5. *Mesoleptus*, sp.

Carberry, Aug. 4, 1892.

6. *Mimesa borealis*.

*Mimesa borealis*, Pack. Proc. Ent. Soc. Philad. vi. p. 408 (1867).

Carberry, Aug. 4, 1892.

Described by Packard from Canada. This species will

ultimately require a new name, unless it has already been redescribed in America, as it is quite distinct from *M. borealis*, Smith, a black insect from Labuan, with which Dr. Packard has confounded it.

7. *Vespa maculata*.

*Vespa maculata*, Linn. Amœn. Acad. vi. p. 412. n. 91 (1764).

Slave River.

The commonest of the North-American wasps, and very distinct from any European species.

8. *Cœlioxys*, sp.

Carberry, Aug. 4, 1892.

RHYNCHOTA.

1. *Rhyparochromus*, sp.

Carberry, Aug. 4, 1892.

2. *Cicada pruïnosa*.

*Cicada pruïnosa*, Say, Proc. Acad. Nat. Sci. Philad. iv. p. 330 (1825).

Carberry, Aug. 4, 1892.

A common North-American species.

3. *Glossonotus*, sp.

Carberry, Aug. 4, 1892.

NEUROPTERA.

1. *Enallagma boreale*.

*Enallagma boreale*, De Selys, Ent. Mo. Mag. xi. p. 242 (1875).

Rapids of the Drowned, June 29, 1892.

Described by De Selys from Newfoundland.

2. *Pteronarcys proteus*.

*Pteronarcys proteus*, Newm. Ent. Mag. v. p. 177 (1838).

Grand Rapids, Athabasca River, June 6, 1892.

The specimens in the British Museum are from New York and Mackenzie River.

3. *Isogenus frontalis*.

*Isogenus frontalis*, Newm. Ent. Mag. v. p. 178 (1838).

Grand Rapids, Athabasca River, June 10, 1892.

Recorded from Trenton Falls, New York, and St. Martin's Falls, Albany River, Hudson's Bay.

4. *Limnophilus*, sp.

Carberry, Aug. 4, 1892.

ORTHOPTERA.

1. *Arphia sulphurea*.

*Gryllus sulphureus*, Fabr. Spec. Ins. i. p. 369. n. 39 (1781).

Carberry, Aug. 4, 1892.

A common North-American species.

2. *Stenobothrus*, sp.

Carberry, July 11 and Aug. 4, 1892.

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III.—*The Morphology of the Generative System in the Genus Testacella.* By WALTER E. COLLINGE, Demonstrator of Biology, Mason College, Birmingham.

[Plate I.]

CONSIDERING how plentiful and widely distributed the three British species of this genus are, and the interesting relations that exist between the *Testacelle* and a number of genera not found in Great Britain, it is somewhat surprising to find that they have received so little attention from malacologists in this country.

One of the most valuable and important works upon the European slugs is that by Dr. Simroth \*, published in 1886, in which he drew attention to the importance of the generative and alimentary systems as a basis for classification; and, although I think it very desirable when describing new species of slugs to fully describe the general anatomy of the same, this valuable monograph has been the means of placing the study of the slugs upon a more rational basis than it has hitherto occupied, and has given students a ready means of distinguishing one species from another by the morphology of the reproductive organs.

Dr. Scharff, in his admirable account of the Irish slugs †,

\* Zeitschr. f. wiss. Zool. 1885, vol. xlii. pp. 203-366, 5 pls.

† Trans. Roy. Dublin Soc. 1891, vol. iv. ser. 2, pp. 513-562, 2 pls.